



A population-based case-control study of extreme summer temperature and birth defects

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Abstract:

BACKGROUND: Although hyperthermia is a recognized animal teratogen and maternal fever has been associated with birth defects in humans, data on the relationship between high environmental temperatures and birth defects are limited. **OBJECTIVE:** To determine whether pregnancies are potentially vulnerable to the weather extremes anticipated with climate change, we evaluated the relationship between extreme summer temperature and the occurrence of birth defects. **METHODS:** We performed a population-based case-control study by linking the New York State Congenital Malformations Registry to birth certificates for the years 1992-2006. We selected nonmalformed infants from a 10% random sample of live births as controls. We assigned meteorologic data based on maternal residence at birth, summarized universal apparent temperature (UAT; degrees Fahrenheit) across the critical period of embryogenesis, and estimated adjusted odds ratios (aOR) and 95% confidence intervals (CI) with multivariable logistic regression, controlling for confounders available on the birth certificate. **RESULTS:** Among 6,422 cases and 59,328 controls that shared at least 1 week of the critical period in summer, a 5-degree increase in mean daily minimum UAT was significantly associated with congenital cataracts (aOR Euro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.51; 95% CI: 1.14, 1.99). Congenital cataracts were significantly associated with all ambient temperature indicators as well: heat wave, number of heat waves, and number of days above the 90th percentile. Inconsistent associations with a subset of temperature indicators were observed for renal agenesis/hypoplasia (positive) and anophthalmia/microphthalmia and gastroschisis (negative). **CONCLUSIONS:** We found positive and consistent associations between multiple heat indicators during the relevant developmental window and congenital cataracts which should be confirmed with other data sources.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3491926>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Climate Change and Human Health Literature Portal

None or Unspecified

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Developmental Effect

Developmental Effect: Reproductive

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Children, Pregnant Women

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified